S18QUIZ: EXP LOG (PRACTICE V1)
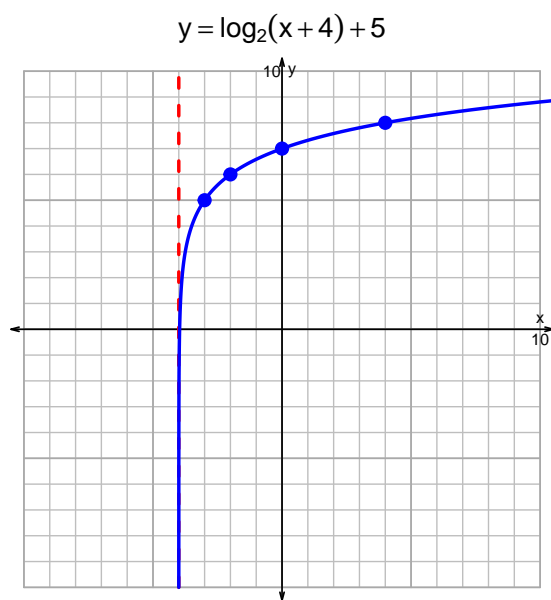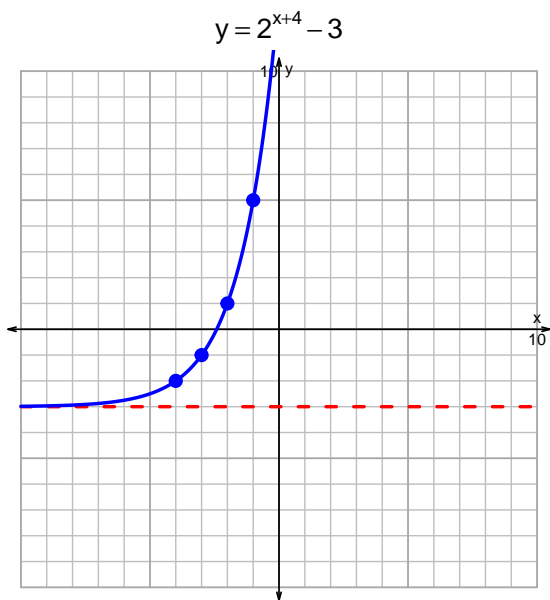
1. Graph $y = 2^{x+4} - 3$ and $y = \log_2(x+4) + 5$ on the grids below. Also, draw any asymptotes with dashed lines.

$y = 2^{x+4} - 3$

$y = \log_2(x+4) + 5$

2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$23 = \left(\frac{7}{5}\right) \cdot 2^{-4t/3}$$

Divide both sides by $\frac{7}{5}$.

$$\frac{23 \cdot 5}{7} = 2^{-4t/3}$$

Take log, base 2, of both sides.

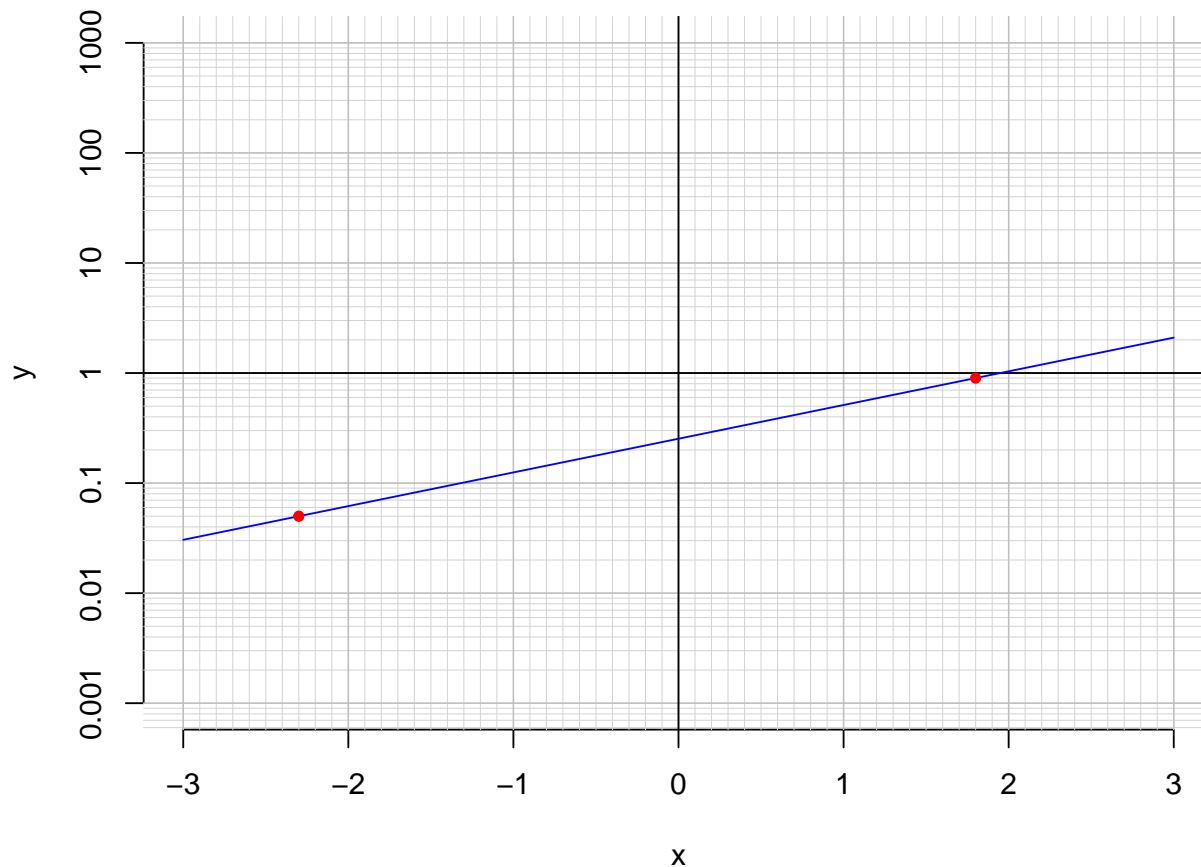$$\log_2\left(\frac{23 \cdot 5}{7}\right) = \frac{-4t}{3}$$

Divide both sides by $\frac{-4}{3}$.

$$\frac{-3}{4} \cdot \log_2\left(\frac{23 \cdot 5}{7}\right) = t$$

Switch sides.

$$t = \frac{-3}{4} \cdot \log_2\left(\frac{23 \cdot 5}{7}\right)$$

3. An exponential function $f(x) = 0.253 \cdot e^{0.705x}$ is graphed below on a semi-log plot.

a. Using the plot above, evaluate $f(-2.3)$.

$$f(-2.3) = 0.05$$

b. Express $f^{-1}(x)$, the inverse of f, with an algebraic expression.

$$f^{-1}(x) = \frac{1}{0.705} \cdot \ln\left(\frac{x}{0.253}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.9)$.

$$f^{-1}(0.9) = 1.8$$